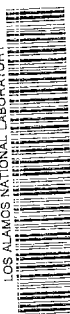


THE ATOM

Los Alamos Scientific Laboratory

December, 1965

LOS ALAMOS NATIONAL LABORATORY



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Volume 2 Number 13

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ON THE COVER: To some of us the cover picture is an abstract rendition of the forest in winter and thus appropriate for the season, but to Christine Pizzuto, the artist, it represents "space travel." Christine is the daughter of Mr. and Mrs. V. P. Pizzuto, 3132 Woodland. Her father works in SD-1, her mother in CMF-9. Christine, 18 and now a freshman at the University of Colorado, was a Los Alamos High School senior when she did the water color as part of a unique art-for-science project that is gaining new recognition for Los Alamos. Winter in the woods or capering in the cosmos, Christine's art work is lovely. A story about the project and some more unusual pictures commence on Page 7.



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Short Subjects

Development of a new acreage-type residential subdivision near White Rock will start when the construction season opens next spring. Developer will be the Cliffside Corporation, which has signed a contract with the Atomic Energy Commission for improvement of 41 homesites on a 164-acre tract known as Pajarito Acres Subdivision No. 2. Lots will be from three to five acres in size. Cliffside will be responsible for building streets and installing utilities in the subdivision, which is south of the existing 150-lot Pajarito Acres subdivision. It is planned that private home construction can start by next summer, when utilities installation is completed. Officers of Cliffside are Herald Kruse, president; Ed Grothus, vice-president; Jerry Buchholtz, treasurer; William Deal, assistant treasurer, and Joseph Fritz, secretary. Sale of the tract concludes the AEC's program for disposing of land for acreage development.

An "over the top" finish was marked for the 1965 Los Alamos Community Chest Fund Drive, Chairman Jesse Rose reported. More than \$44,000, some 7 per cent above the goal, was received or pledged. The excess makes it possible for the Chest to respond to an appeal from the United Service Organizations for funds to assist in providing entertainment facilities in Viet Nam. The USO asked for \$600. Other funds over the \$41,600 drive goal will be held by the Chest for emergency use.

Gerald S. Bell, 47, a staff member in W-3, died November 4 at his home in Santa Fe. A native of Denver, Colo., Bell had been a Laboratory employe since 1950 and held a BS degree in mechanical engineering from New Mexico A&M. Survivors include his wife and three children. Burial was in the National Cemetery at Santa Fe.

Dr. Michael M. May, 39, has been appointed Director of the University of California's Lawrence Radiation Laboratory, Livermore, the sister to



I.ASL in the nation's nuclear weapons development. Dr. May, a native of France but a United States Army paratrooper in World War II and naturalized citizen since 1944, was a member of the original Livermore staff in 1952. The appointment by the Univer-

sity Regents fills a vacancy created when Livermore Director John S. Foster was named Director of Defense Research and Engineering for the Department of Defense in September. Dr. May has done extensive research in both the theoretical and experimental aspects of weapons work and has made significant contributions to the development of thermonuclear weapons and of devices with reduced relative yields of radioactivity.

Charles R. Canfield, LASL Personnel Director, has been elected chairman of the Governor's State Advisory Council for Personnel Administration. He has been a member of the group for a year. A former laboratory employe, Raymond B. Powell, now vice president for personnel at Sandia Corporation, has been named chairman of the State Personnel Board. The two personnel officials were roommates in collegiate days at the University of Michigan.

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Shorts . . .

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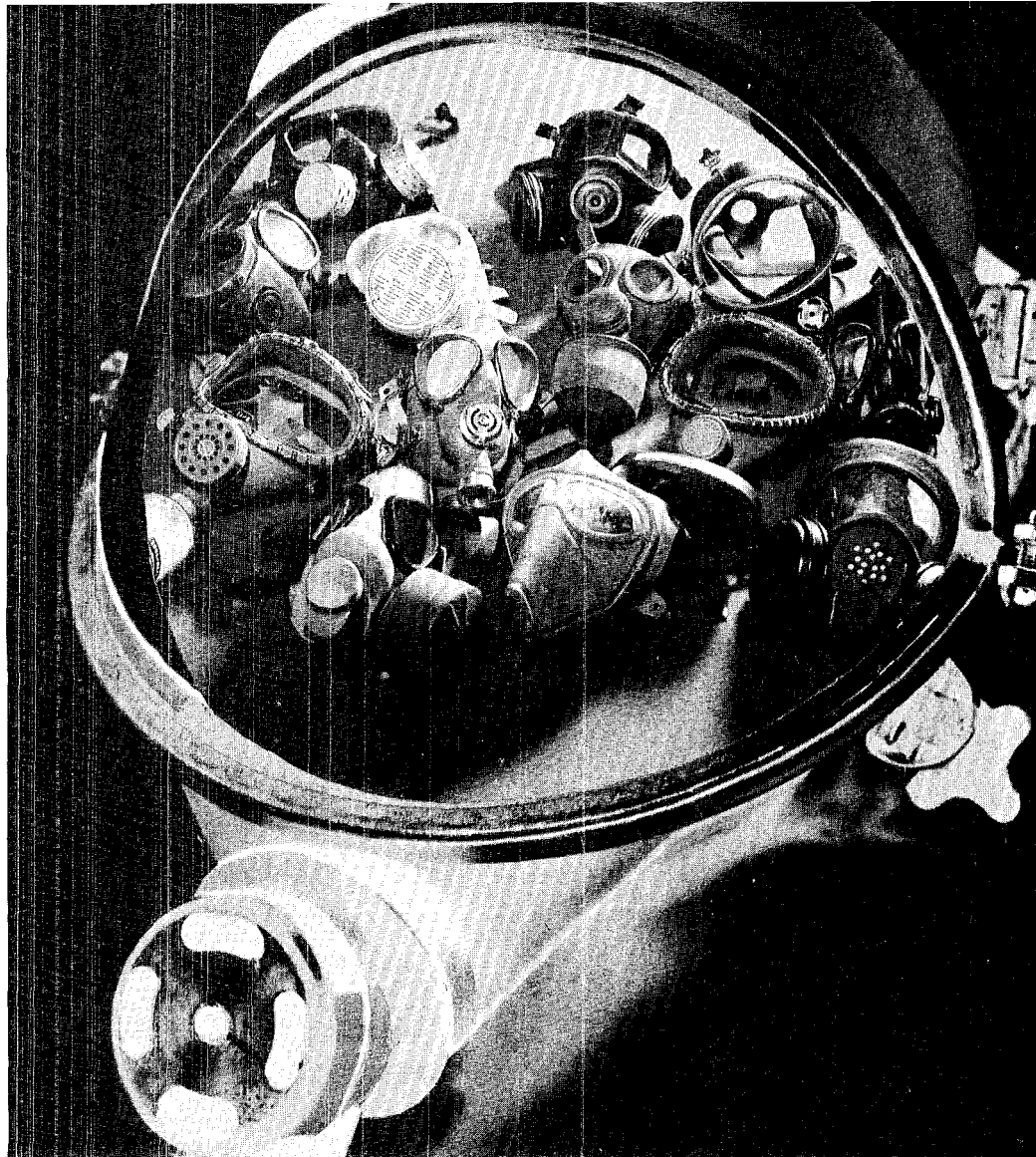
Los Alamos vehicle traffic flows easier now since completion in November of two major road projects. Diamond Drive, the main north-south thoroughfare, was reopened between Sandia Drive and Arkansas Avenue with its roadbed widened to four lanes and the grade reduced by elimination of the "Baptist Church hill." Diamond now is four lanes for its entire length, from Pajarito Road in the Tech Area to San Ildefonso Drive at Barrance Mesa. Also reopened to through traffic was Pajarito Road at the Pajarito Canyon descent. New there is a relocated right-of-way and reduced grade. Both roads had been closed since mid-summer.

Sir Dennis Barnett, a member of the United Kingdom Atomic Energy Authority (Britain's AEC), and Edward F. Newly, director of the Atomic Weapons Research Establishment at Aldermaston, England (Britain's LASL), were autumn visitors to Los Alamos. They visited technical sites and conferred with Director Norris Bradbury.

"Disposal," a word that attained almost legendary proportions during 10 years of waiting, became a reality November 18 when the Government started selling its Los Alamos residential real estate to occupants. Very first buyer was William C. Overton, Jr., who paid some \$7,500 for 289 Manhattan Loop, a three-bedroom Group 17 house he has occupied since the fall of 1962. Overton, his wife Muriel, and children George, 17, John, 14, and Ellen, 11 (pictured here with her parents), have lived in Los Alamos since March 1962. The family came from Washington, D.C., where he worked with the U.S. Naval Research Laboratory. A Ph.D. staff member in CMF-9, Overton said he plans to continue living in the house. He said he found it hard to believe he could buy the property at such a favorable price—"it's a bonanza." HHFA officials said they hope to close Eastern Area sales at the rate of three or four a day and offer Western area houses for sale in February.

Work has begun on an 88-unit motel, The Los Alamos Inn, on a far-seeing tract in old TA-1, across Trinity Drive from Ashley Pond. Officials of Pony Express, Inc., motel chain that is erecting the \$800,000 facility estimate it will be open about mid-June of 1966. The motel will result in the closing of The Lodge, now Los Alamos' only commercial lodging, within 10 days of the Inn's opening. Contractor on the project is Koran Construction Company of Albuquerque.

They Clean the Air



Respirators once rated with neck braces and whalebone corsets in wearer popularity. The ill-fitting devices were drags on the lungs, tempers, safety standards and, ultimately, job performance. But in the last decade, respirators have reached new levels of sophistication, a development to which LASL's Industrial Hygiene Group (H-5) has made significant contributions.

This group's overall responsibility is occupational health—the policing of the job environment. But default by U.S. industry and government in upgrading respirator standards has cast, for many years, H-5's top two men as national gadflies in the field.

Harry F. Schulte, group leader,

and Edwin C. Hyatt, the alternate, came to Los Alamos in the late 1940s. They discovered Lab personnel who handled extremely toxic materials, like plutonium, were being outfitted with respirators accepted “by faith.” No commercial respirator was officially approved for such duties. Fitting was also a problem. To be safe, a respirator must make a 100 per cent airtight seal with the face. Many didn't. Says Hyatt of the early Laboratory days: “I would estimate that no more than 75 per cent of the people got good protection.”

In 1956, Schulte and Hyatt acted. The field of respirator design hasn't been the same since.

Listen to some of the top industrial hygienists:

● A manufacturer, G. M. Glidden of South Haven, Michigan's Acme Protection Equipment Co., says, “Among (respirator) manufacturers and knowledgeable users, the most often asked questions are, ‘Has Los Alamos seen it?’ or ‘What does Los Alamos say about it?’”

● The manager of Occupational Hygiene at the Hanford Occupational Health Foundation, Frank E. Adley, praises H-5 for helping bring about “a proper climate in which our present technology of respiratory protection was nurtured.”

● The associate director of the University of Iowa's Institute of Agricultural Medicine, Dr. Clyde M. Berry, notes: “This small group

continued on next page



If the mask leaks, Darrell A. Bevis will get a good whiff of banana oil. Manning the test chamber controls is Gilbert H.

Ferran. Tests of new equipment are part of regular work routine for members of the Industrial Hygiene Group, H-5.

Clean Air . . .

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at Los Alamos has consistently been in the vanguard—testing, designing, improving. (It) found very early that many sacred concepts were erroneous.”

● The chief of Health Research, U.S. Bureau of Mines, S. J. Pearce, comments simply, “Ed Hyatt’s efforts . . . have been tireless and sincere. He certainly has been a ‘burr under the saddle’ in this field.”

Respirator design and testing were long overdue a jab in the flanks.

Respirators date from Pliny the elder, circa 70 A.D., who used masks to protect his sinuses from vermillion dust. Mention is made of their use in Sixteenth Century

mining. But the real development started about World War I. The Bureau of Mines first set up minimum requirements in 1913 for an oxygen mask, designed for mine rescue.

By 1945, Los Alamos was machining plutonium and beryllium for the atomic bomb, and respirator research was totally inadequate to guarantee the worker’s safety. Laboratory personnel were outfitted in Army M-9 full-face masks, which provided satisfactory protection but presented fitting problems, and in half masks. The latter were approved only for protection against materials less toxic than lead; plutonium can be a million times more dangerous.

The equipment available, though vulnerable, apparently provided most of the affected Lab employees

with at least minimum protection. Schulte says about 15 persons still with LASL inhaled quantities of plutonium “higher than we would have liked.” They get urinalyses routinely, and are barred from plutonium work areas.

But when Schulte and Hyatt joined the newly-formed Industrial Hygiene group in 1948 and 1949, it still wasn’t known if masks used here were sufficient. “We thought we had a good mask but we didn’t know for sure,” says Schulte. They did know one thing: the masks available were not designed for comfort. In the early 1950s, this factor became crucial in Nevada during the spate of nuclear tests. The high-efficiency filters required compounded the effort needed to breathe through the respirators. “We tried to interest the AEC and

Harry F. Schulte (left), H-5 Group Leader, and Edwin C. Hyatt, Alternate, have worked long and hard for improved respiratory equipment standards. Many of their recommendations are now standard specifications.

the Bureau of Mines—and they were interested in these problems—but nothing had really been done,” recalls Schulte. “We went about trying to set up some criteria.”

Interest of other AEC contractors was whetted. In February of 1956, the AEC organized a meeting of plutonium-using contractors at the Bureau of Mines, Pittsburgh. As a result, a respirator committee was appointed which included Hyatt and Harry S. Jordan, who is now group leader of H-8. In 1960, this committee released specifications for respirators which afford protection against inhalation of airborne radioactive particles.

Another committee was formed in 1958, with Hyatt as chairman, to write a definitive manual on respirators. This was a joint technical committee of the American Industrial Hygiene Association and the American Conference of Governmental Industrial Hygienists. After five years, during which Hyatt “spent a couple of years working on Saturdays and Sundays at home,” the 162-page book was published, and is THE reference work in the field.

In the late 1950s, the LASL researchers were not overly popular with respirator manufacturers. “They had been making respirators

(unhindered) for so many years that they resisted our suggestions,” says Hyatt. But H-5 persevered. Respirators were relentlessly tested for facial fit, strap arrangement, filter efficiency, breathing ease, vision and cold weather use. Gradually, if grudgingly, industry “found out that we, and others, were interested,” explains Schulte, “and they became very cooperative.” Today, it is rare for a respirator design to enter production without testing by H-5 and, more frequently now, by other users. “It’s a mutual benefit,” says Schulte. “We get the benefit of the improved product when it comes out.”

H-5 is partly responsible (wholly, in some instances) for a number of innovations. Three companies, for example, changed half-mask suspension systems after H-5 reviews. Filter cartridges were tightened. Four companies, instead of one, now have systems for

mounting eye glasses inside full-face masks after LASL prodding. (About 125 Lab employees have prescription glasses mounted in their personal masks.)

Extensive H-5 testing in sub-zero conditions four years ago led to development of nose cups for commercial full-face masks—a “mask-within-a-mask” concept that channels exhaled air directly to the outside. Otherwise, moisture freezes over the face plate. Using a GMX-2 cold chamber, researchers worked in temperatures to minus-30 degrees. “Three companies came out with nose cup inserts in production models after these test results were published,” Hyatt reveals.

Testing them, of course, is not H-5’s primary interest in respirators, but rather the outfitting of LASL (and AEC and Zia) employees with the best available. About 600 full-face masks are issued to indi-

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Respirators are reassembled after an ultrasonic cleaning by Lourdes A. Rendon (left) and Polly Montoya of H-1. Damaged units are destroyed rather than risk an injury from faulty repair.

Clean Air . . .

continued from preceding page

viduals for regular use. Another 500 employees wear respirators infrequently, ranging from a 10-cent glass fiber "nuisance" mask to \$250 self-contained breathing apparatus.

Users of half and full-face masks get a thorough check-out in H-5's test chamber, built in 1955 to calibrate air sampling equipment. Filled with a highly pungent banana oil (isoamyl acetate) vapor, the chamber quickly pinpoints leaks from improper fits.

The Lab's biggest users of respirators are employees at DP-West, the plutonium refining complex, where mask standards are stringent. Eldon Christensen, a section leader in CMB-11, says masks must be capable of trapping radioactive dust particles as small as .3 of a micron wide (human hair is about 40 to 120 microns in diameter). He credits the commercial full-face mask, introduced here in 1958, with a major role in reducing the plutonium hazard to DP-West personnel.

Respirators are a "must" during repairs and maintenance chores inside Laboratory hot cells. An example is the large hot cell complex of CMB-14 (located in Wing 9 of the CMR Building). Joe Fitzgibbon, operations supervisor, says that cells where reactor fuel elements are sawed apart in test post mortems pose particular hazards in the form of dust particles. About 25 men in this working area are issued respirators.

At DP-East, where plating of reactor fuel elements occurs, the masks must be capable of removing acid mists. Toxic fumes and organic compounds make respirators necessary for about 80 employees at S-Site. Personnel who work in pits or tanks containing highly toxic vapors or gases stake their lives on respirator protection. The masks also are standard equipment for recovery teams in Nevada nuclear detonations and reactor tests.

Decontamination of soiled masks is done by H-1 at the Lab's radioactive waste disposal facility. Masks are taken apart and given ultra-

sonic cleanings and new canisters if needed. If at all damaged, the respirators are destroyed, says Supervisor Earl J. Cox. "They must leave here in as good a condition as new."

Use of defective respirators and their resale as surplus rankles Hyatt. He has been known to write chastising letters to health and safety people at installations elsewhere whose supply and property departments have peddled defective surplus masks. "A man's health is at stake," he says. "We can't allow defective masks to be put on the market."

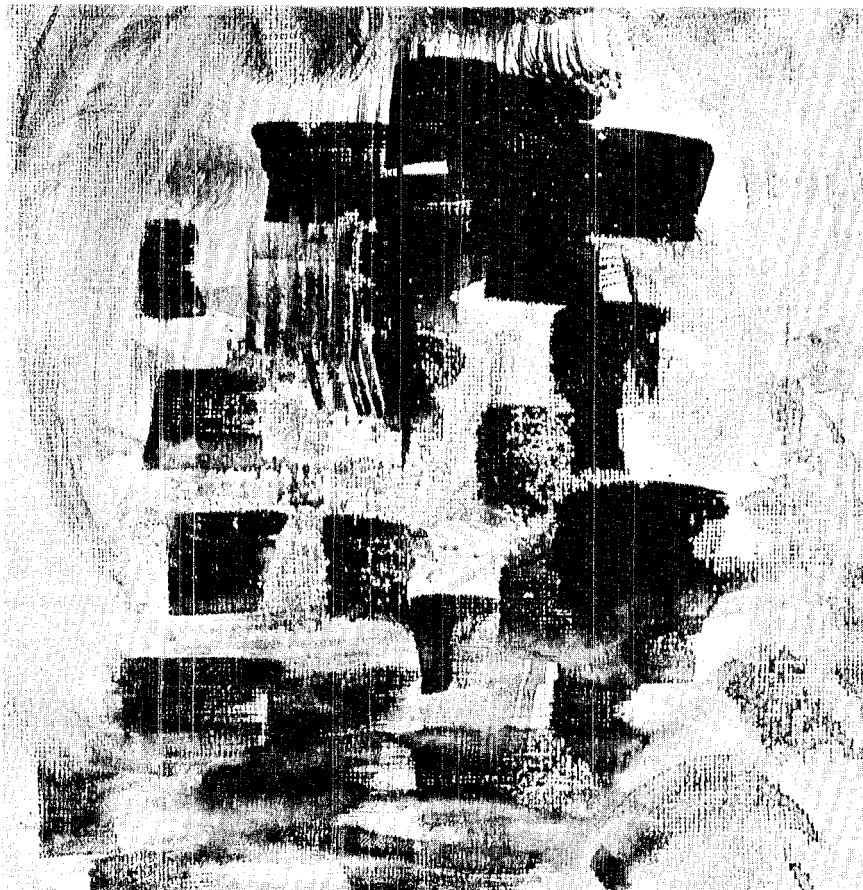
This brand of vigilance characterizes H-5's contributions to better respiratory equipment. For a time, it should be remembered, the LASL group and a few other concerned hygienists labored virtually alone in the quest for improvements. Today, quoting Dr. Berry of the University of Iowa, "Workers throughout the world are now better protected through the initial and continuing efforts of this small cadre."

"Mirrors Community Creativeness"

Student Art in Lab Ads

By EARL ZIMMERMAN

Linda Porter, who was in the eleventh grade, submitted this conception of "High Speed Computers." It is done in blues, black and white, has mottled tone.



Illustrations for the Laboratory's 1965-1966 technical magazine advertising series are the products of art students in the Los Alamos schools.

The idea was first discussed at a Personnel Department advertising conference a year ago. Bob Meier, head of the Recruiting Group (PER-2), then made his proposal to the six art instructors in the elementary, junior high and senior high schools:

Let the students create their personal interpretations of subjects suitable for Laboratory personnel advertising.

The results were remarkable. Although there was nothing compulsory about the project and no real prizes were offered, dozens of youngsters participated. The completed pictures, mostly in watercolor but some in tempera and chalk, were turned in last spring.

Subjects ranged from "What My Daddy Does in the Laboratory" to "High Speed Computers" and "Space Travel," with a dozen more in between.

There was no competition. The only award is identification in the

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Above: "Space Travel" was drawn by Ruth Ann Fowler, a senior last year and student of Robert Visel. Colors are light blue, black and white.



Above right: Conglomerate of orange, black and brown was used by Charles Abeyta to create a three-dimensional version of "The Power of the Atom." He was in eleventh grade.

Right: Eleven-year-old Julie Wagner used red, black, yellow and orange chalks to create "Solar Flares." She was a Mountain School art student; class was instructed by Joe Moody.



Robert Ribe, who was a fourth grader at Mesa School, impressed his teacher, Robert Meade, with swirls of reds, rust, black and white. His picture was submitted for consideration untitled.

Art . . .

continued from page 7

ad and a color proof of the ad as it appears in publication. Selection of pictures for use has been left entirely to the agency in Albuquerque that handles the advertising campaign.

The first ad appeared in October issues of Scientific American, Chemical and Engineering News, Mechanical Engineering, Nucleonics and Physics Today. These same publications and an occasional additional placement in others for special ads, will carry other pictures and messages through April of 1966.

All who have seen the picture collection have been excited by the art work. Fred McCaffrey, president of the agency, said his staff was "very enthused" over the entire series.

"The quality of the work says a great deal about Los Alamos and its citizens," McCaffrey said. "The young people who did these portrayals reflect the imagination and creativeness of their parents, certainly an important attribute for a research center."

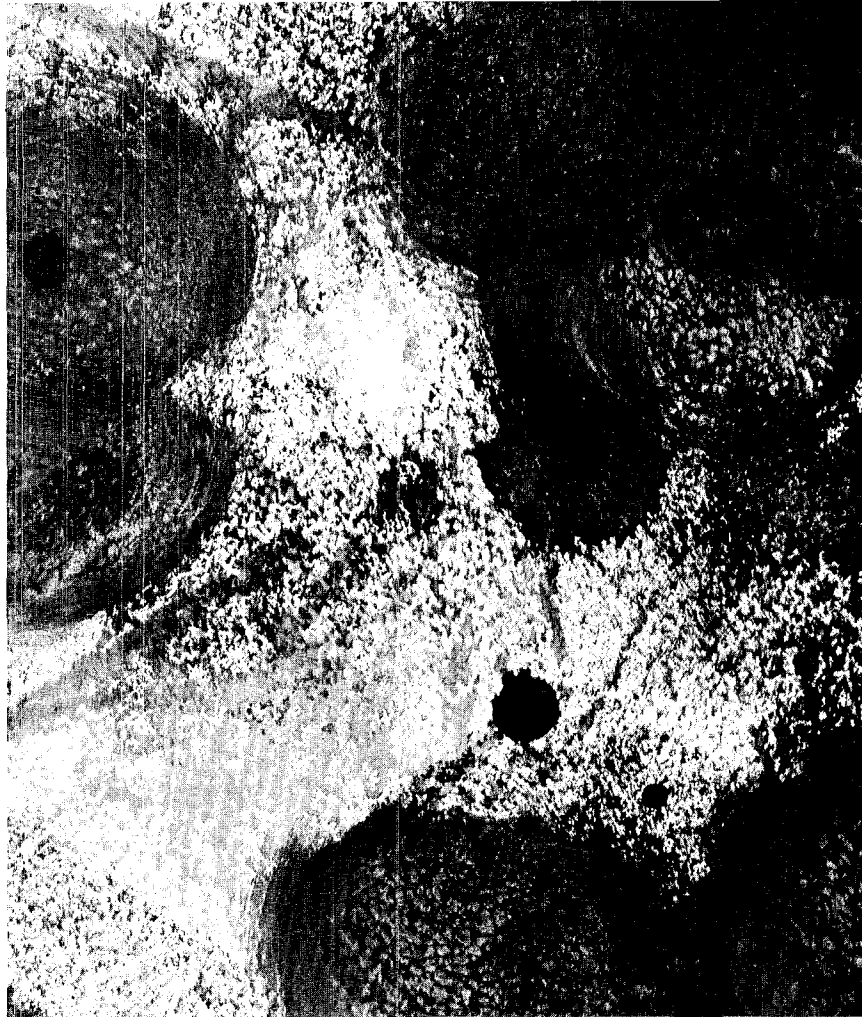
Robert Meade, one of the elementary school instructors, said he was impressed with the zeal shown by his young students in participating, "especially since they knew there was no contest involved."

The use of abstractions in advertising is not new to the Laboratory. Meier and an agency several years

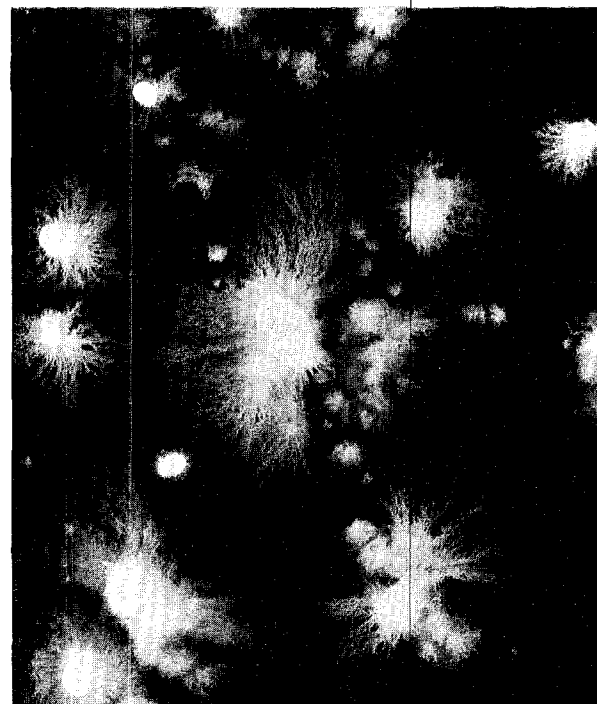
ago cooperated in selecting the works of a group of Taos artists for ad illustrations. That series was widely acclaimed as a sort of "breakthrough" in advertising illustration. The originals from the Taos series have been on a national exhibition tour for a year and a half under the title "Art and the Atom."

Laboratory advertisements last year were illustrated with a colorful series of photographic "interpretations" by Albuquerque artist-designer William Thonson.

None of the pictures accompanying this story has yet been selected for ad use, but all are being considered. The ad running in December issues of the national magazines is reproduced on the back cover of this Atom, but the illustration is in black and white instead of the original gold tones used by the artist.



Moss-like globs of orange on black were chosen by Linda Jean Carson, a sophomore, for "Fusion of the Atom."



Return to Fort Union

Original sidewalk leads visitors through
Fort Union ruins on the Santa Fe Trail.

A rabbit scampers into the shadows. Somewhere in the distance a cow bawls. In the western sky, clouds are now blue-purple fringes to the silhouetted mountains. To the east, the horizon grows cold over a sea of grass. And in between sprawls the silent, crumbling ruins of Fort Union, a darkened Stonehenge on the New Mexico prairie.

Sunset at Fort Union National Monument, 26 miles northeast of Las Vegas, is a striking experience. It's a lonely scene, and the loneliness is authentic. For over one hundred years ago, and for forty years after that, this frontier fort was a bleak, desolate outpost, an incarceration without shackles for many a red flannel-sleeved private.

Yet in shaping the destiny of the American Southwest, the fortress at the fork of the Santa Fe Trail was both witness and participant, and a very vital one at that.

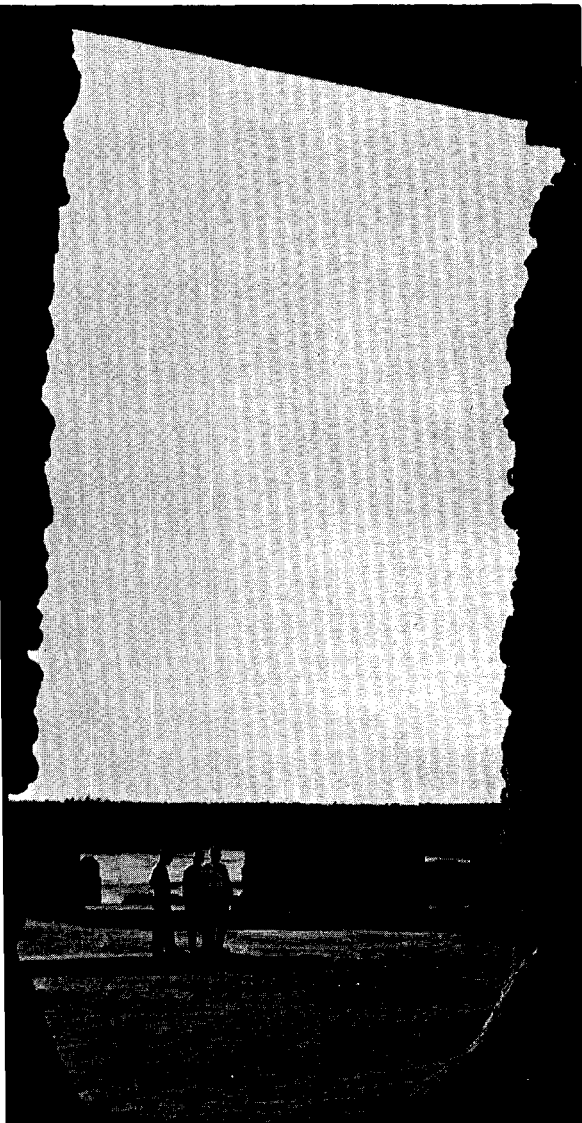
Since 1956, Fort Union has had National Park Service protection. It came none too soon. In the 60-odd years after the last troop column marched out—singing “There’s a land that is fairer than this”—

decay, plunder and historical insouciance took their tolls. The remains, now tended by a four-man staff on a 720-acre reserve, are an impressive memorial to the men and events that subdued the West.

Fort Union sits well off—and out of sight of—U.S. Highway 85, but is connected by State Highway 477. A half mile southwest of the U.S. 85-State 477 junction languishes the aging

village of Watrous. Though hidden from U.S. 85, the melted adobe walls and chimneys of the fort are visible miles away, teetering on the edge of a vast grassy saucer. Only a handful of living Americans has viewed this scene: Fort Union has attracted just 120,000 visitors in 10 years, a mere fraction of the spectators anticipated.

Despite the decay, the markings of Fort Union are



indelibly clear. Stone foundations, quarried out of nearby Governmental Canyon, trace the ground plan of the entire fort. Further wall erosion has been checked by chemical treatment and stabilization. The hefty military prison, with its miniscule cells, withstands, and remnants of the fort's arsenal—built to the west across Coyote Creek—blend into the shadows.

Intriguing indentations are found in the grama grass prairie. Immediately to the east are tracks of the Santa Fe Trail, row after row of groovings smoothed into gentle furrows by time. The trail is perhaps 150 yards wide here. This was the Mountain Route, the longer branch that traversed the Arkansas River Valley and entered over Raton Pass. Preferred by many travelers, it had more water and less danger from Indian attacks than the Cimarron Route. Also flanking the fort is the eight-pointed-star "Bastioned Redoubt" earthwork, a maze of underground quarters, ditches, parapets and bombproofs built to house 600 men. It was unique in the West.

There were actually three Fort Unions; the short-lived underground facility was No. 2.

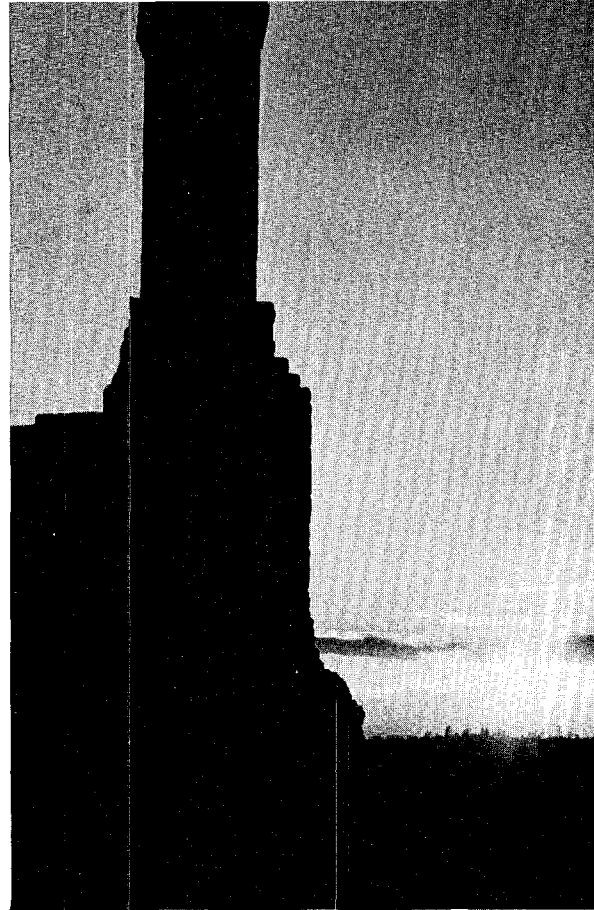
Fort Union No. 1 was a jerry-built motley of unpeeled and uncured log structures, started in August of 1851 beneath the pinon-clad mesa to the west of today's ruins. Lt. Col. Edwin V. Sumner placed it there because the site was isolated yet strategically

located: it removed the soldiers from the temptations of the towns, especially Santa Fe (which New Mexico Commander Sumner called a "sink of vice and extravagance"), and placed them near the junction of the Santa Fe Trail.

The 30 or so buildings were shabby, accident-prone and susceptible to the *Cimex lectularius*.^{*} But for 10 years, its occupants were prime instruments against Indians who attacked outlying settlements and travelers

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^{*}Bed bug.



Chimney in "officers' row" stands in stark silhouette against the setting sun.

By DUDLEY LYNCH

Photos by Bill Jack Rodgers

Fort Union . . .

continued from preceding page

on the Santa Fe Trail. Soldiers died unglamorous deaths against Jicarilla Apaches, Utes, Kiowas, Comanches and Mescalero Apaches. Lt. Joseph Maxwell, ambushed by Apaches west of Fort Union in 1854, was one; "a braver, gallant or more high-toned gentlemen and soldier never drew sword," his captain said.

Then the Civil War broke out. The ranks of the Army split. In the exodus to the Confederate side went the commander of Fort Union, Maj. Henry H. Sibley, a rugged man with an aquiline nose, jutting chin and monstrous handlebar mustache. With him went detailed knowledge of Fort Union's defenses. It was then that the massive earthen field work, "the star fort," was begun, in July of 1861. But the elaborate precaution never faced a Confederate attack. The reason is a sobering chapter in New Mexico history, entitled, "The Battle of Glorieta Pass."

Major Sibley, after a trip to Richmond, returned a brigadier general, determined to capture the West and its mineral resources. He organized 2,500 men at San Antonio and continued to El Paso. A Confederate Territory of Arizona, which included southern New Mexico, already had been declared, and Sibley mounted his campaign aimed at the heart of the West.

Federal forces were not idle, but despite an army of 3,800, they lost to Sibley and his Texas legions at the Battle of Valverde, near Socorro, on February 21, 1862. The Confederates occupied Albuquerque and Santa Fe by early March. Only Fort Union barred the way to Denver.

The governor of Colorado Territory, conscious

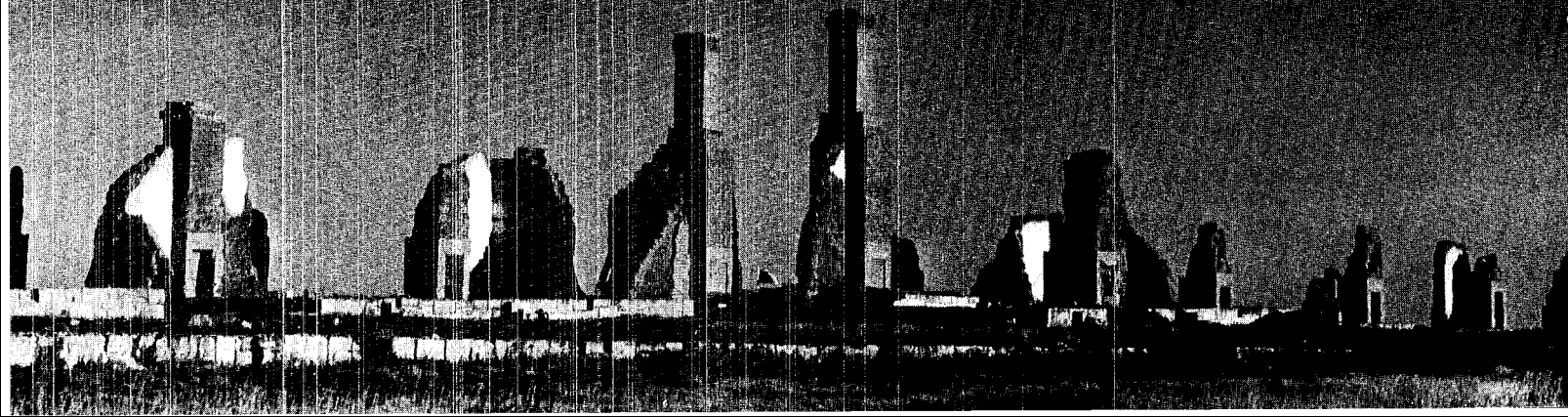
of the danger, dispatched a regiment of volunteers, the "Pike's Peakers," on a dramatic forced march to Fort Union. Their commander was Col. John P. Slough, a wiry fighter with a full, prickly beard and a ballpoint nose. He was hungry for the offensive.

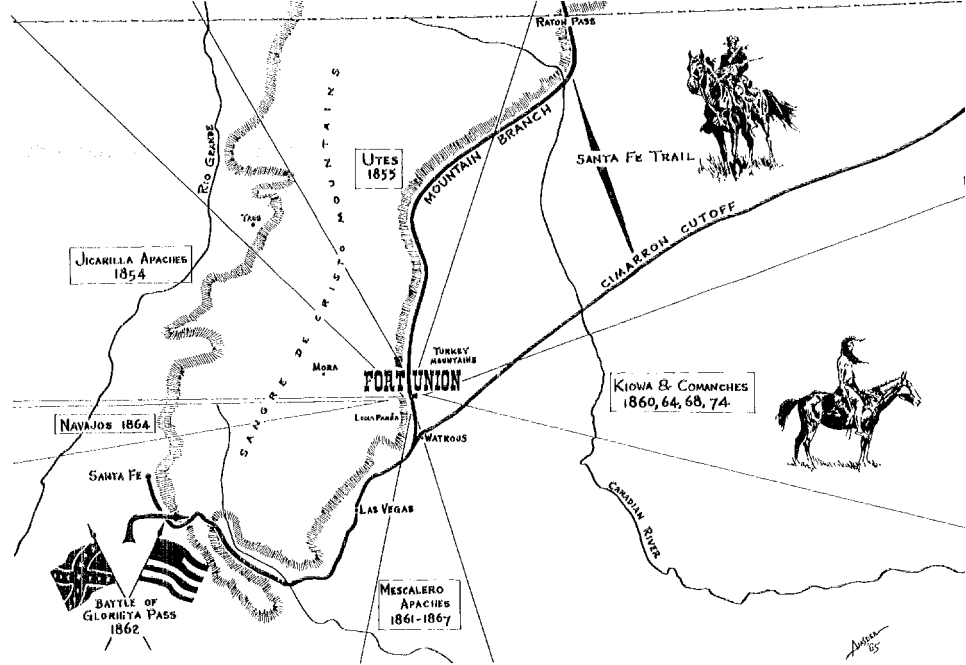
The battles came on March 26 and 28 near Glorieta Pass, a defile threaded by the Santa Fe Trail 15 miles southeast of the present state capital. On the 26th, a Union force of 400 men, commanded by Major John M. Chivington, a Colorado minister, and four companies of the Fifth Texas, commanded by Major Charles L. Pyron, collided in Apache Canyon. Five Federals and 32 Confederates were killed. As night came, Pyron sent for Lt. Col. W. F. Scurry, who hurried from his camp at Galisteo with the Seventh Texas and part of the Fourth.

On the 28th, Slough with 900 men and Scurry with 700 men met about 10:30 a.m. at Pigeon's Ranch. Under repeated assaults, the Federal line fell back twice. As the sun sank, both forces neared physical collapse. Yet the Confederates were but a hair's breadth from victory when Scurry received disastrous news. Major Chivington and his 400 had slipped south of the pass, caught the guards of the Confederate supply train unaware and destroyed it. Stripped of supplies, the Confederates were beaten, and a day later withdrew, leaving 36 dead. The Federals lost 29 men. The "Gettysburg of the West" was decisive in retaining Federal dominance on the frontier, and Fort Union had gone unattacked.

Today, the Glorieta battlefields are remarkably serene and unaltered. Pigeon's Ranch is reached

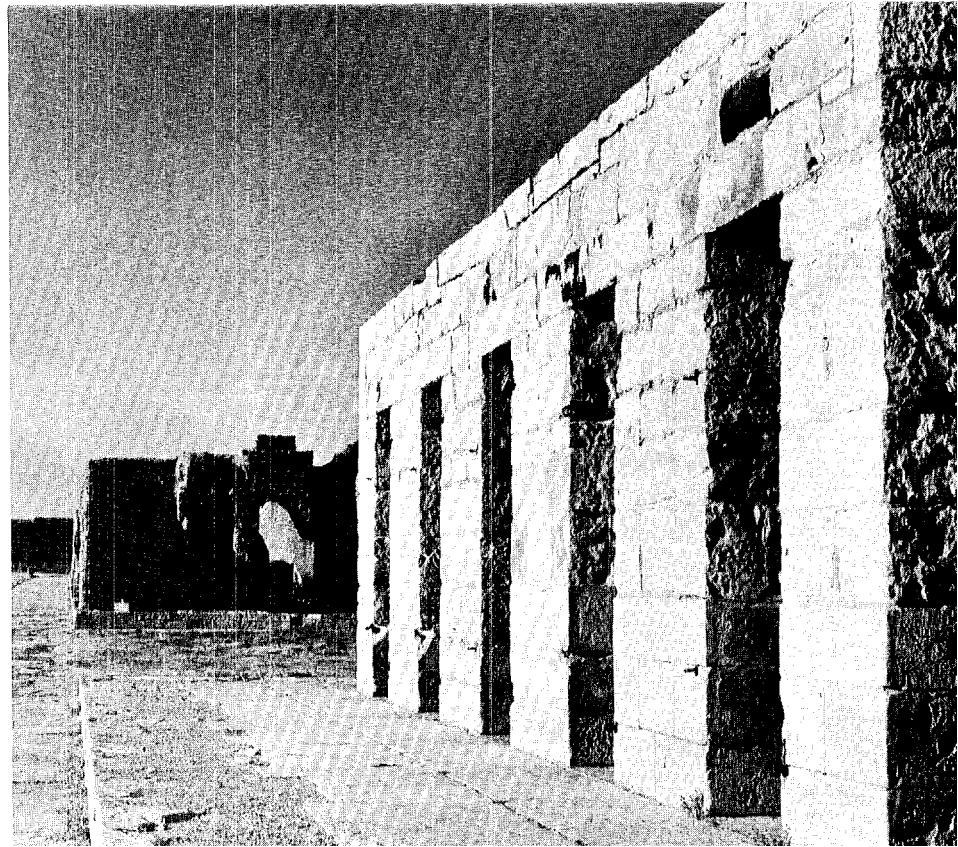
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Strategic location of Fort Union at the fork on the Santa Fe Trail made it a hub of civilian commerce and center of military activity for 40 years. Map and illustrations were drawn by Tony Amsden.

Stone military prison cells remain intact except for heavy wooden doors. Cell block's outer adobe wall has vanished, victim of erosion.





Flag waves from atop hillock behind Greer museum at Glorieta Pass. Guideposts along ascending trail indicate areas significant to Civil War battle.

Even the knee-high grama grass fails to hide century-old wagon ruts of the Santa Fe Trail uniting at Fort Union.



Fort Union . . .

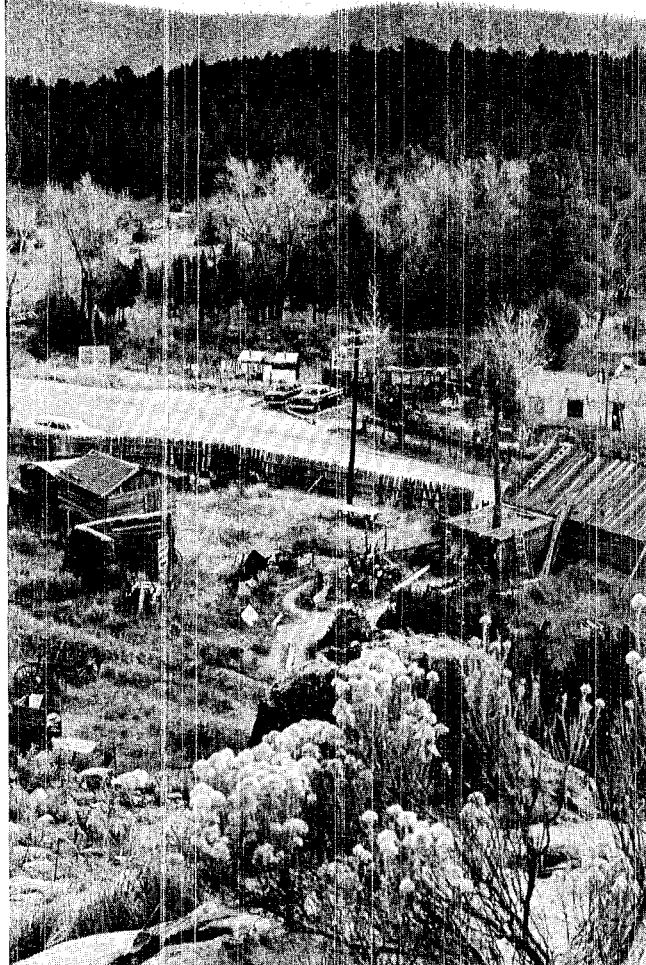
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east of Glorieta on U.S. 85A. The ranch's present proprietor is a spry, bandy-legged oldtimer named Thomas L. Greer, who claims to have lived there for 45 years. He is 85, widowed and determined to stay. When his 160 acres straddled the main highway, he did a thriving tourist business, advertising the "oldest well in the United States," and the Glorieta Battlefield. Although the National Park Service takes a diminished view of the Greer enterprise, Greer is a delight as a raconteur.

With the western demise of the Confederacy, Fort Union entered a new era. The "star fort" was uninhabitable. In November of 1862, Fort Union No. 3 was begun. It was big, the largest fort on the Nineteenth Century Southwestern frontier. The architectural trappings were "territorial" and were to start a lingering style trend. Actually the installation was three-in-one: The Post of Fort Union, the Fort Union Quartermaster Depot and the Fort Union Ordnance Depot, built on the site of Fort Union No. 1 (which had been torn down when its shacks became bordellos). The facilities took six years to construct and housed 2,500 persons, both soldiers and civilians, at their busiest.

Life for the common soldier was excruciatingly dull. The plainest of Janes were ardently courted, and keeping a female maid was a virtual impossibility. Barracks were barren of niceties. Drinking was a favorite pastime. The men set up sports contests, raced wild burros and gambled—but the loneliness was never stayed.

This was the paramount reason for the popularity of Loma Parda, dinky little village of sin on the Mora River seven miles southwest of the fort. It had liquor, dances, gambling and women. The Army viewed Loma Parda with mixed emotions, but a young soldier wrote



Pigeon's Ranch, site of 1862 Battle of Glorieta Pass, has been privately-operated tourist attraction for many years. Highway 85A in center follows route of the Santa Fe Trail.

in his diary in the mid-1860s: "For many of them (the soldiers) it was the one place in all that country that they left with a feeling of regret." When Fort Union was closed, Loma Parda virtually succumbed; it is now a well-preserved ghost town off State Highway 160.

After Glorieta Pass, some skirmishes were again fought by Fort Union troops, notably against the Mescalero Apaches and the Navajos in 1862-63, the Apaches again in 1867 and the Plains Indians in 1868 and 1874. But the depot—with its commodious warehouses and well-stocked repair and maintenance operations—vied ably with the garrison as the center of activities. It was the supply depot of the Army in New Mexico, and remained so until the Santa Fe Railroad arrived in 1879.

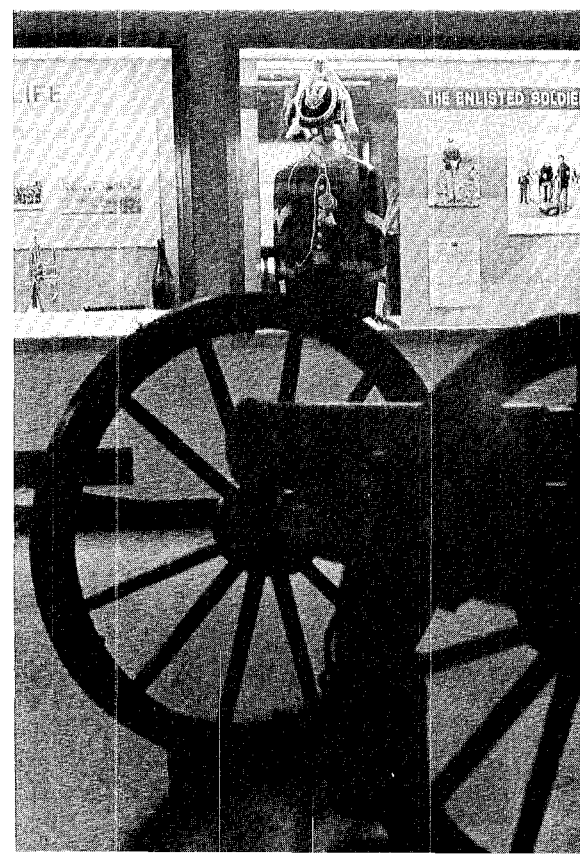
The railroad was the mortal blow to Fort Union. The Indians had been conquered. The Santa Fe Trail was now obsolete. The hand-

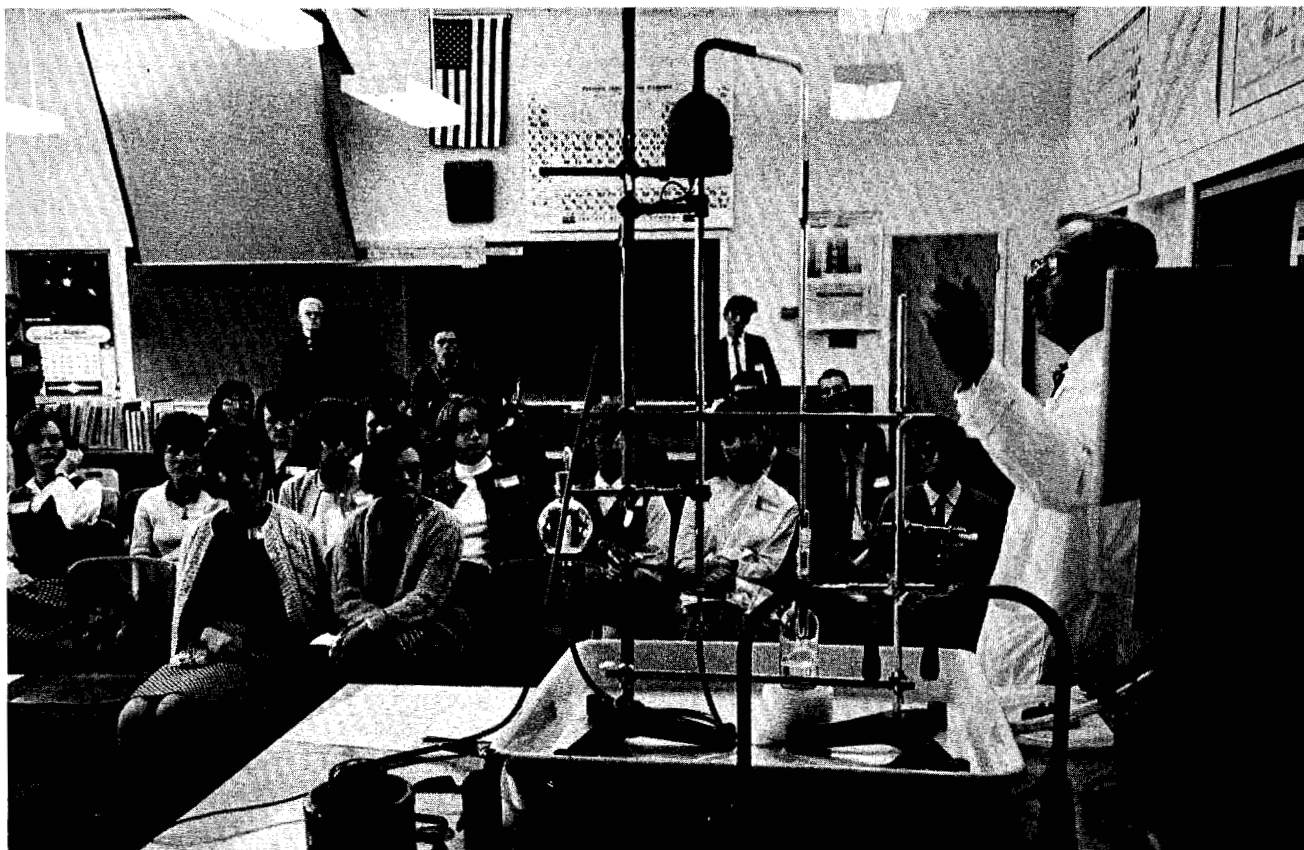
writing was on the wall, although it was 1891 before the giant adobe complex—a microcosm of frontier life during its 40 years on the edge of the plains—closed its doors and died.

Then the elements attacked, roofs collapsed and disintegration set in. Sixty-five years were to pass before Fort Union and its legacy of the West were placed in the gentle hands of the National Park Service. Since then, the Park Service has excavated and refurbished, stabilized and preserved—all in anticipation of an annual flood of visitors that has not reached expectations.

But for those who do visit Fort Union, especially at late afternoon as the shadows lengthen, the words of a Park Service historian echo in their ears: "If monotony can be defined as being a time when a man finds life boring, lonely and empty, then soldiering at Fort Union would serve as a prime example."

Old Cannon is among memorabilia on display in Fort Union National Monument Museum that opened in 1959.





Visiting chemistry students and teachers listen and watch attentively as Sherman Rabideau of CMF-9 demonstrates safe and proper way to distill mercury by using apparatus that is found in most high school chemistry laboratories.

Los Alamos Pioneers

By ED WALTERSCHEID

Safety Symposium

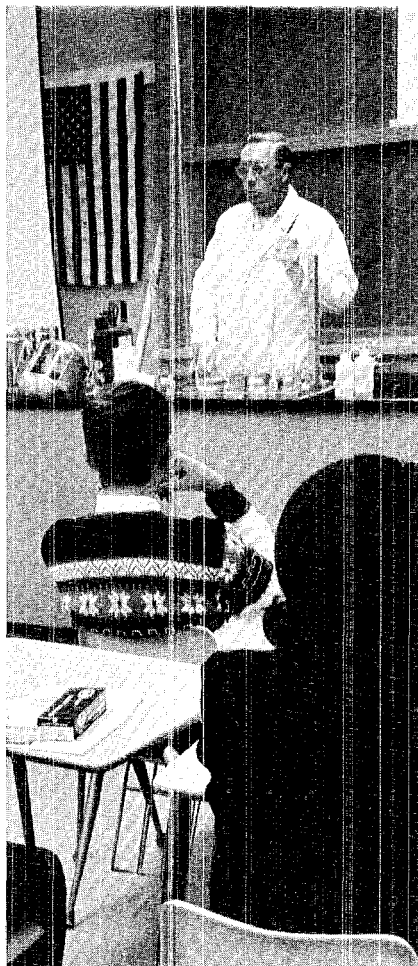
for Chemistry Students

"If for some reason you had to stuff a lead pipe with match heads or TNT, which would you choose?"

Ray Rogers, GMX-2 alternate group leader, posed that question to 124 students and 39 high school chemistry instructors who attended a symposium on chemical safety held in Los Alamos November 6.

Rogers' question was obviously loaded. Don't stuff a lead pipe with either substance, but if you must, the TNT would be safer. Match heads, which are made of phosphorus sulfide plus a strong oxidizing agent, are 100 times more likely to explode than the TNT.

Material presented at the symposium, which was sponsored by the Central New Mexico Section of the American Chemical Society, the



Left: Metallic sodium is tricky stuff to handle. Eldon Christensen tells symposium group how to do it in safety.



Right: Albro Rile, Assistant Fire Marshall for Los Alamos, waves flaming material to illustrate lab fire hazard.

Laboratory, the AEC, and the Los Alamos Schools, represented the first major effort in this country at the local level to alleviate the growing problem of accidents in high school chemistry laboratories.

The ACS says there are about one million students enrolled in high school chemistry classes in the United States. Although no national figures have been compiled on accidents, an extension of a survey made of California schools indicates some 5500 chemistry students across the country will be involved in moderately serious and serious laboratory accidents during the course of the school year.

Moderately serious accidents are those requiring more than minor first aid treatment, but not causing permanent injury or loss of more than one day of school. Serious ac-

cidents are defined as those causing permanent disfigurement or loss of more than one day of school.

The most common laboratory accidents are cuts resulting from broken glass tubing inserted in rubber stoppers. Probably the second most common injuries are chemical burns and burns resulting from hot objects. Explosions are somewhat further down the list but they cause an inordinate number of the moderately serious and serious accidents.

Ed Hammel, CMF-9 group leader, who was in charge of the highly successful symposium, said one of the main objectives of the symposium was to demonstrate the respect that professional chemists show for the chemicals with which they work. This respect comes from a detailed knowledge of the properties of these

or similar substances and from this knowledge arises a "way of life" in the laboratory which automatically includes adequate safety practices.

Because the high school chemistry laboratory is the place where many students first come into contact with potentially dangerous chemicals, the symposium's local organizing committee felt that there were certain basic ideas it was important to "get across." The committee, composed of Hammel; W. E. Keller of CMF-9; R. G. Shreffler, alternate W Division leader who is a member of the Los Alamos School Board, and Roy Reider, LASL Safety Director, wanted to emphasize the following:

- Since chemistry is an experimental science, laboratory work is

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More than 150 high school students and chemistry instructors attended the symposium on laboratory safety sponsored by LASL, the American Chemical Society and the

Los Alamos Schools. Sessions were held in the Civic Auditorium and High School classrooms. Group is listening to talk by Harry Schulte, Industrial Hygiene Group Leader.

Safety . . .

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essential. With proper precautions, the handling of chemicals in the high school laboratory is safe. Under certain other circumstances, though, these same chemicals can be extremely dangerous.

- In science and industry, elaborate and costly safety precautions are taken when working with possibly dangerous chemicals.

- Safety in the chemistry laboratory involves understanding what one is doing, correctly assessing the dangers involved, and behaving accordingly.

- Human fingers, arms, legs, eardrums, and particularly eyes are very, very vulnerable.

- If involved in an accident in a chemical laboratory, know what

to do to minimize the extent of injury and damage.

Principal symposium speakers were Reider, who spoke on general safety practices in scientific work; Harry Schulte, Industrial Hygiene (H-5) group leader, who discussed chemical toxicity; and Rogers, who talked on explosives.

The students and teachers were also divided into small groups to view exhibits illustrating various safety precautions essential in a chemical laboratory. These concerned toxicity, flammable solvents, electrical hazards, handling and storing of dangerous chemicals, disposal of hazardous chemicals, explosive gas mixtures, and fire extinguishers. There were demonstrations on the proper mixing of acids, glass blowing, fire polishing, and safe methods of inserting glass tubes

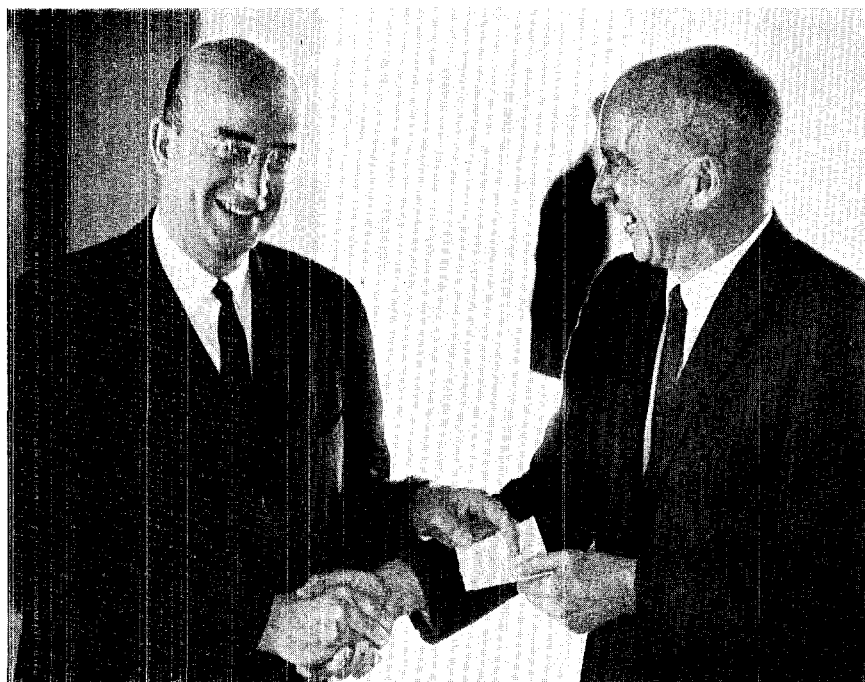
through rubber stoppers.

One of the exhibits stressed the importance of adequate preparation in the carrying out of a chemical experiment. Another demonstrated the use of laboratory safety equipment and first aid procedures for accidents likely to occur in a chemical laboratory—eye injuries, acid burns, and shock.

The national office of the American Chemical Society is showing great interest in the chemical safety symposium. Articles on it are scheduled to appear in "Chemical & Engineering News," and the ACS has plans to encourage its other sections to sponsor similar symposiums.

If the local organizing committee has its way, a chemical safety symposium in Los Alamos will be an annual affair.

Head of this year's "20-year class" of Laboratory employes, Director Norris E. Bradbury (right) receives pin and congratulations from University of California President Clark Kerr after surprise presentation at Board of Regents meeting in Riverside, California.



Kerr Cites Bradbury for 20 Years -

Service Awards to 250

Laboratory Director Norris E. Bradbury, who has presented hundreds of veteran service pins to LASL employes, received one himself last month, a 20-year award from University of California President Clark Kerr.

The surprise recognition came during a meeting of University Regents November 19 at the Riverside campus. Bradbury was invited to report on LASL research projects and the outlook for the future.

In making the presentation, Kerr noted that Bradbury had become a civilian employe of the University and Director of the Laboratory on the same day, October 14, 1945. Bradbury had been engaged in the bomb project at Los Alamos, but as a Navy officer.

Sporting his own 20-year pin, Bradbury returned to the Hill to preside over December 2 service pin award ceremonies for approximately 250 employes marking 20, 15 and 10-year employment anniversaries.

The eligibility list is the largest in Laboratory history. Asterisks indicate employes who were eligible earlier but who had not received pins. Those in the 20-year class:

George W. Allen, GMX-3; Richard K. Beauchamp, P-9; Homer O. Blackledge, SD-5; Charles W. Bottom, GMX-3; Dorothy C. Boyer, PER-3; Norris E. Bradbury, DIR OFF; *Laurence J. Brown, P-1; Carl W. Buckland, H-1; *Arthur W. Campbell, GMX-8; Bengt G. Carlson, T-1; Jacqueline G. Cyz-

more, DIR OFF; *Robert S. Dike, P-16; Harry F. Duhamel, SD-5; Beatrice L. Dunahugh, PER-3; Irving Goldfarb, SD-5; James E. Greenwood, SD-1; David B. Hall, K-DO; Arthur Hemmendinger, W-8.

Gerald D. Hoff, SD-5; George J. Hofreiter, SD-5; Stanley G. Johnstone, SD-5; Roy Krohn, CMB-3; John D. McFerrin, SD-4; Filiberto E. Martinez, SP-8; *Charles F. Metz, CMB-1; Mary S. Mirabal, GMX-7; James W. Noble, SD-1; Bernard H. Pohlmann, SD-2; Clyde E. Reum, SP-3; Harlow W. Russ, W-3; Ruben J. Sandoval, GMX-2; Bert F. Schnap, H-6; Gerold H. Tenney, GMX-1; Leonard H. Treiman, CMB-3; Eugene W. Trou-

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Service Pins . . .

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dale, SD-5; Richard K. Van Vleet, SD-5; Elmer J. Vonderheide, SD-5; Richard J. Watts, K-DO; Roger J. Westcott, N-DO, and John V. Young, PUB.

Those listed for 15-year pins:

Joseph M. Allen, Sr., GMX-3; *Robert Apodaca, GMX-3; *Felix B. Archuletta, GMX-3; George P. Arnold, P-2; Armando G. Benavides, H-1; Margaret M. Bensen, PER-3; Robert J. Berglund, SD-2; Francis G. Berry, D-8; Carl W. Bjorklund, CMB-11; Keith Boyer, J-DO; Merle E. Bunker, P-2; Ethel L. Campbell, SP-DO; Loren A. Carlson, GMX-7; Dorothy W. Chambard, D-8; William H. Chambers, W-7; William C. Chiles, GMX-8; Beverley D. Clark, P-9; James S. Clayton, SD-4; Margaret L. Cole, ENG-DO.

Joseph D. Cunningham, SD-5; Eugene W. Cunnington, ENG-2; William E. Deal, Jr., GMX-6; Manuel C. Delgado, GMX-6; Joseph J. Devaney, T-DOT; John P. Devine, AO-4; Robert H. Dinegar, GMX-7; *Donald C. Dodder, T-9; Patricia H. Douglass, H-1; Robert M. Douglass, CMB-1; Lawrence E. DuFrane, SD-4; Frances M. Duran, GMX-7; Lawrence M. Elmore, GMX-7; Robert E. Faudree, GMX-4; Lloyd H. Gibson, SD-5; Byron W. Gilligan, CMB-6; Irving Goldstein, SD-1; Benjamin G. Goodier, N-4; George M. Grover, N-5.

Gordon E. Hansen, N-2; Paul E. Harper, T-1; F. Newton Hayes, H-4; Winfred L. Headdy, D-8; Theodoro L. Herrera, CMB-6; Henry Heyman, D-DO; Harold A. Hidy, ENG-3; Bruce E. Hoverson, W-1; Alvin E. Humbyrd, GMX-3; Edward A. Humphrey, CMB-7; Alice E. Hunter, BUS OFF; George E. Jaynes, Jr., CMB-6; Vernon J. Johnson, W-3; Richard J. Kandel, W-8; Henry J. Kavanaugh, CMB-1; Albert F. Keddy, SD-5; *Bernice S. Kelly, T-DO; Eugene C. Kerr, CMF-9; Peter F. Kleczka, SD-1; Gordon W. Knobloch, J-11.

Eugene Lamkin, D-8; *Donald A.

Larson, J-8; Edward M. Little, P-15; Robert W. Livingston, SD-5; Albert G. Lopez, GMX-6; Alex Lovato, CMB-6; Jean McClelland, H-5; Berthus B. McInteer, CMF-4; John H. McQueen, J-10; John S. Malik, J-DO; John H. Manley, DIR OFF; Joseph B. Mann, Jr., CMF-4; Aniseto Martinez, SP-4; Delfino Martinez, GMX-3; Leopoldo E. Martinez, H-1; Robert L. Mills, CMF-9; Russell H. Mingo, ENG-4; John L. Montano, SP-3; Frank M. Montoya, CMB-6; Benjamin L. Moore, W-DO; Philip F. Moore, J-11; Harry A. Morris, SD-5; Robert N. R. Mulford, CMF-5; Marvin A. Murphy, CMB-6.

Albert Naranjo, SD-1; Douglas E. Nash, SD-1; H. Milton Peek, J-10; Bennie Pena, N-2; Robert E. Perlee, D-8; James A. Phillips, P-14; George S. Price, GMX-7; Arthur D. Quackenbush, SD-5; James H. Richardson, T-DOT; Eugene H. Roach, SD-4; Samuel L. Roberts, SD-5; Clayton D. Ross, K-3; T. Perry Rutherford, N-3; Earl R. Rutledge, GMX-DO; Betty V. Rynd, J-DO; Nicholas L. Salazar, P-14; Phyllis C. Sanders, H-4; Stephen B. Schulte, CMB-6; William A. Scott, SD-5; Donald F. Silver, SD-5; Jane R. Spack, PUB; Paul R. Stein, T-7.

Leona Stewart, P-10; Eugene L. Stivers, P-1; William H. Sullivan, SD-4; Frederick R. Tesche, MP-5; Thelma A. Thomas, N-2; Edward J. Van Etten, GMX-3; Douglas Venable, GMX-11; Pedro S. Vigil, GMX-3; Robert Vigil, CMB-6; Glenn R. Waterbury, CMB-1; Charles R. Wherritt, ENG-DO; George N. White, Jr., T-5; Grace L. Williamson, SP-12; *John G. Williamson, GMX-7; *Thomas B. Williamson, GMX-3; William W. Wood, GMX-10; Frederick D. Worman, H-8, and Kermit C. Worthington, SD-1.

Ten-year pin recipients:

Martin Aguilar, M&R; Robert D. Albertson, PER-1; Amadase M. Alex, GMX-3; Dan Baca, D-2; David J. Blevins, N-3; *Rea Blossom, J-6; Grenfell P. Boicourt, P-16; Charles I. Browne, J-DO;

Edward L. Brundige, CMB-6; Charles W. Caldwell, GMX-6; Max L. Chavez, GMX-2; Ruth L. Clark, SP-12; *Richard L. Cubitt, K-1; Walter R. David, CMB-3; Howard B. Demuth, K-4; *Dana L. Douglass, CMF-5; Joseph J. Duben, K-3; Paul M. Dugan, W-1; Donald E. Elliot, ENG-2; Guy R. B. Elliott, CMF-2; Morris J. Engelke, H-1.

Lorraine J. Gallegos, H-7; *Thomas B. Geelan, CMF-9; William U. Geer, N-2; Clara L. Green, GMX-7; Francisco A. Guevara, CMF-4; Donald C. Hagerman, MP-2; Fay C. Harris, D-8; Cecelia A. Hayden, AO-5; Jacqueline J. Hofheins, J-1; George L. Johnson, H-7; William G. Johnson, D-3; Llewellyn V. Johnston, GMX-3; Daniel W. B. Jones, GMX-3; Virginia M. Josefson, H-1; Alfred R. Koelle, P-1; Kenneth C. Kohr, J-12; Raphael J. LaBauve, K-1; H. Maxine Lewis, CMB-3; Andrew M. Lockett, T-9; E. Dan Loughran, GMX-2; *John L. Lundgren, K-4; Mary G. McAlister, GMX-3.

Leo W. McDonough, N-2; Donald A. McKown, H-1; Allan F. Malmberg, T-7; Mary L. Marlett, P-9; Cornelio G. Martinez, H-7; Presciliano Martinez, M&R; Paul J. Masanz, GMX-3; George E. Meadows, K-2; Vera L. Mench, GMX-3; Carmen R. Montoya, J-6; Darragh E. Nagle, MP-4; Herbert J. Newman, N-3; Cayetano R. Ortiz, H-1; *Eugene A. Plassmann, N-2; Clyde H. Reed, N-2; Robert D. Reiswig, CMF-13; Lawrence L. Rice, J-7; Chester R. Richmond, H-4; Margaret A. Riedel, T-1.

Alita M. Roach, W-DO; Emilio J. Rodriguez, GMX-6; Jose O. Romero, GMX-7; Freddie Salazar, P-1; William Spack, T-7; *Leland B. Sprouse, J-16; Melvin T. Thieme, W-4; Helen L. Thompson, GMX-7; *Luciano Torres, GMX-7; Jose P. Valdez, H-7; Joe A. Vigil, H-1; John W. Ward, CMF-5; Loren A. Wertz, CMB-6; Donald R. Westervelt, J-10; Lawrence A. Whinery, K-3; Dorothy E. Williamson, T-7; Patricia K. Wittman, PER-DO, and James B. Henshall, J-17/NTS.

The Technical Side

Presentation at Colloquium, University of California, San Diego, Oct. 27:

"Meson Factory" by Louis Rosen, MP-DO.

Thermionics Specialists Conference, IEEE, San Diego, Oct. 25-27:

"Heat Pipes: European and U.S. Survey" by W. A. Ranken and J. Kemme, both N-5.

Presentation at Regional Workshop on the Report Literature, sponsored by Rio Grande Chapter, SLA, and Science-Technology Div., SLA, Albuquerque, Oct. 31-Nov. 3:

"Non-Automated Service with a Smile at LASL" by Betty S. Jackson, D-2.

"Metallurgy: Evaluation of G-WI, NSA, STAR and TAB Coverage of the Subject" by R. Virginia Winsor, D-2.

American Physical Society Meeting, Charlottesville, Va., Nov. 1-3:

"Width-Fluctuation Effect and Angular Distributions" by L. Cranberg, P-DOR, J. S. Levin, P-9, T. A. Oliphant, Jr., T-9, and C. D. Zafiratos, P-DOR.

Computer Sciences Colloquium, Purdue University, Nov. 1:

"Combinatorial Computing and Programming Language Design" by Mark B. Wells, T-7.

IAEA Symposium on Criticality Control of Fissile Materials, Stockholm, Sweden, Nov. 1-5:

"Criteria for the Storage of Fissile Material" by David R. Smith, N-2.

Sandia Research Colloquium, Sandia Base, Albuquerque, Nov. 3:

"Reactor Programs at the Los Alamos Scientific Laboratory" by D. B. Hall, K-DO.

Meeting of the New Mexico Society for Biological and Medical Research, Albuquerque, Nov. 13:

"The Effects of Oligomycin on Intact Cells" by C. T. Gregg, H-4.

"Mechanism of Bacteriophage Lambda-DNA Infection of Escherichia coli" by B. J. Barnhart, H-4.

"An Outline of the LASL Biomedical Research Programs in Molecular and Cellular Biology" by D. G. Ott and D. F. Petersen, both H-4.

Presentation at First AEC Symposium on Accelerator Radiation Dosimetry and Experience, Brookhaven National Laboratory, Nov. 3-5:

"The Radiation and Shielding Design Factors for the Los Alamos Meson Physics Facility" by Donald R. F. Cochran, MP-4, Harvey I. Israel, H-DO, and Donald W. Mueller, MP-5.

Seventh Annual Meeting of the Division of Plasma Physics, American Physical Society, San Francisco, Nov. 8-11:

"Computation of Electrostatic and Rapidly Pulsed Magnetic Fields" by H. R. Lewis, P-14.

"Reduction of the Fokker-Planck Equation for Applications to Practical Plasma Dynamics Problems Involving Deviations from Thermal Equilibrium" by Thomas A. Oliphant, Jr., T-9.

"Bounce Model Pinch Stability" by Richard L. Morse, P-18.

"Plasma Generated by a Coaxial Arc in Cesium Vapor" by Thomas F. Stratton and D. J. Roehling, both N-5.

"Stability, Heating, and End Loss of a 3.5-Megajoule Theta Pinch (SCYLLA IV)" by Warren E. Quinn, Edward M. Little, Fred L. Ribe, and George A. Sawyer, all P-15.

"Feasibility Study of a Theta-Pinch-Type, Pulsed Thermonuclear Reactor" by Fred L. Ribe, P-15, Thomas A. Oliphant, Jr., T-9, and Warren E. Quinn, P-15.

"A Compact High-Voltage Theta Pinch" by Edwin L. Kemp, Earl M. Dolnick, Robert S. Dike, all P-16; George A. Sawyer, P-15, and James L. Tuck, P-DO.

"A Study of the Optimization of an Integral 1/B Stable Caulked Cusp Field" by D. A. Baker, P-17 and L. W. Mann, T-5.

"Design Study for a Toroidal Quadrupole Closed Field Containment Experiment" by John Marshall, Don A. Baker, and Ivars Henins, all P-17.

"A Dense Deuterium-Tritium Plasma Focus Discharge" by Joseph W. Mather, P-14.

Meeting of Central Bureau of Nuclear Measurements, sponsored by European American Nuclear Data Committee, Brussels, Belgium, Nov. 29-Dec. 3:

"Precision Assay by Fission Counting" by Gordon W. Knobloch, J-11.

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Tech Side . . .

continued from preceding page

American Nuclear Society Meeting, Washington, D.C., Nov. 15-18:

"Kiwi Temperature Coefficient" by C. B. Mills, T-DOT.

"Some Feasibility Studies of the Nuclear Destruct Concept for Rover Reactor Disposal" by L.D.P. King, RFS, and C. B. Mills, T-DOT.

"Particle Size Distributions from Rover Fuel Element Fragmentation Studies" by E. E. Campbell, H. M. Ide, W. D. Moss, all H-5, and R. J. Reithel, GMX-7.

"Some Biological Aspects of the Use of Spheroidized Fuel in Space Nuclear Power Systems" by W. H. Langham, H-4.

"Particle Size Distribution from the TNT Excursion" by E. E. Campbell and W. D. Moss, both H-5.

"Gamma Scanning with Anticoincidence Spectrometers" by Dale M. Holm and Wm. Mort Sanders, both K-1.

"Shielding Considerations for the Proposed Los Alamos Meson Physics Facility" by Donald R. F. Cochran, MP-4 and Harvey Israel, H-DO.

"Measurement of the Microscopic Distribution of Oxygen and Carbon in Metals by He³ Activation" by Dale M. Holm, K-1.

"Moments Equations and Equivalent Discrete Ordinates Equations, Parts I and II" by Bengt G. Carlson and Kaye D. Lathrop, both T-1.

"High Temperature Compatibility Testing of Molten Plutonium Fuel-Container Systems" by Robert L. Andelin, K-2.

First Annual AIME Operating Metallurgy Conference, Pittsburgh, Nov. 29-Dec. 3:

"High Energy Rate Forming of Refractory Metals" by Donald J. Sandstrom, CMB-6. (INVITED)

Presentation at ESRO Colloquium, Stockholm, Sweden, Nov. 16-18:

"Observations of Particles in the Tail of the Magnetosphere" by S. J. Bame, P-4.

Third International Conference on Plutonium, London, England, Nov. 22-26:

"The Anomalous Thermal Expansion, Specific Heat Magnetic Susceptibility and Band Structure of Delta Plutonium" by E. A. Kmetko, CMF-5.

"Electronic Band Structures of Plutonium and Its Monocarbide" by E. A. Kmetko and J. T. Waber, both CMF-5.

"Magnetic Susceptibility of Delta-Plutonium Alloys" by J. L. Lunsford and E. A. Kmetko, both CMF-5.

"Studies on the Equilibrium Temperature for the Plutonium Alpha-Beta Transformation" by J. W. Anderson, R. R. Gilmore, and W. J. Maraman, all CMB-11.

Refractory Plutonium Fuel Materials" by J. A. Leary, W. C. Pritchard, R. L. Nance, and M. W. Shupe, all CMB-11.

"Slip in Alpha Plutonium" by Stanley E. Bronisz and Raymond E. Tate, both CMF-5.

"An Informal Discussion of Preliminary Data Relative to Diffusion of Gallium in Plutonium" by R. E. Tate and G. R. Edwards, both CMF-5.

American Society for Mechanical Engineers Meeting, Chicago, Nov. 7-11:

"Radiation Diffusion in Non-Steady, Two-Dimensional, Fluid Flows" by Cyril W. Hirt, T-3.

"Extensive Review of the Literature and Recommended Correlation for Heat Transfer to Flowing Hydrogen, 60-500°R" by K. D. Williamson, Jr. and John R. Bartlit, both CMF-9.

Lecture for "Personal Protective Equipment Course" at University of Oklahoma Medical Center, Nov. 8:

"Respirator Use" by Edwin C. Hyatt, H-5.

Presentation at University of British Columbia, Vancouver, Canada, Nov. 23-24:

"Actinide Complex Fluorides from Pa through Pu" by L. B. Asprey, CMF-4.

Eleventh Conference on Magnetism and Magnetic Materials, San Francisco, Nov. 16-19:

"Effect of Assumed Electronic Configuration on the Electronic Band Structure of Nickel" by E. C. Snow, J. T. Waber and A. C. Switendick, all CMF-5.

"Localized Moments of Dilute Fe in Iridium" by R. D. Taylor and W. A. Steyert, both CMF-9.

Symposium on Transition Metal Chemistry, Los Angeles, Nov. 18-20:

"The U(VI) Catalysts of the V(III)-Fe(III) Reaction" by T. W. Newton and F. B. Baker, both CMF-2.

American Physical Society Meeting, Fluid Dynamics Div., Cleveland, Nov. 22-24:

"A Quantitative Schlieren Study of the Vibrational Relaxation of Oxygen" by Robert W. Lutz and John H. Kiefer, both GMX-7.

Symposium on Transition Metal Chemistry, Western Regional Meeting of the American Chemical Society, Los Angeles, Nov. 18-20:

"Vibrational Spectra and Nature of Bonding in Metal-Cyanide Complexes" by Llewellyn H. Jones, CMF-4.

Presentation at Colloquium, University of Washington, Nov. 22:

"Actinide(V) Complex Fluorides from Pa thru Pu" by L. B. Asprey, CMF-4.

Presentation at IIT Research Institute, Solar Eclipse Workshop, Oct. 1'-2:

"Measurement of Solar X-Ray Emission in Selected Lines from 16Å to 44Å" by H. V. Argo, P-4, J. A. Bergey, P-1, W. D. Evans, B. L. Henke, M. D. Montgomery, and S. Singer, all P-4.

Presentation at Staff Seminar in Nuclear Engineering Dept., Purdue University, Nov. 5:

"Fast Neutron Penetration in Air by 'Sn-Method' with Special Emphasis on the Use of 'Multitable-Multigroup' Cross Section Sets" by Henry A. Sandmeier, T-DOT.

NEW HIRES

Robert D. Bowyer, Kansas City, Mo., ENG-1

Larry Barton Unkrich, Redondo Beach, Cal., P-4

Barrett B. Parsons, Buffalo, N.Y., GMX-11 (Rehire)

William C. Erickson, Madison, Wisc., CMB-6

Michael Selby Alton, Mercury, Nev., J-8

Helen R. Heckle, Los Alamos, GMX-7

Shirley Ann Douglas, Los Alamos, PER-3

Paul Roger Williams, Richmond, Va., T-1

Daisy C. Mueller, Los Alamos, H-4

Leevi David Williams, Fairview, N.M., H-7

Charles Andrew Forest, Fond du Lac, Wisc., T-6 (Rehire)

Jan Kirk Studebaker, Columbus, Ohio, MP-3

Hugh S. Murray, Tucson, Ariz., N-4

Cecil C. Carnes, Jr., Golden, Colo., D-6 (Rehire)

Gloria Jo Ham, Los Alamos, SP-3

Margaret H. Gonzales, Los Alamos, SP-12

Danny Burl Stillman, Livermore, Calif., J-8

Larry Steven Blair, Cleveland, Ohio, GMX-7

Barbara Joan Cheadle, Los Alamos, SD-DO

Zoe Ciscon, Los Alamos, K-4 (Rehire-Casual)

Fred Lado, Jr., Gainesville, Fla., GMX-10

William J. Stratmann, Albuquerque, N.M., SD-1

Jeri Lin Johnson, Los Alamos, SP-11

Irene M. Evans, Los Alamos, SP-12

Larry E. Feick, Washington, D.C., M & R

Joe Duane Golden, Los Alamos, J-11 (Casual)

Prudence Jaramillo, Los Alamos, MP-DO

Suzanne E. Murray, Tucson, Ariz., N-7

Alvin H. Guenther, Dunbar, Neb., CMB-AS

Jere L. Sanchez, Alcalde, N.M., M & R (Rehire)

David E. Helfer, Denver, Colo., K-4

Jerry Lee Lowance, Denver, Colo., ENG-3

Elizabeth Sarah Roybal, Santa Fe, N.M., SP-12

Jerry Nathan Beatty, Sunnyvale, Calif., J-7

Richard Allen Kent, Houston, Texas, CMB-11

Stanley Elwood Chance, Livermore, Calif., P-9

Nancelie Burdette, Los Alamos, P-9

Betty Marie Ekberg, Espanola, N.M., D-2.

Nicholas C. Metropolis, Chicago, Ill., T-DOT (Rehire)

Mary Evelyn Grant, Los Alamos, GMX-3 (Rehire-Casual)

Severiano Roybal, Santa Fe, N.M., SP-3

Richard L. Durmaj, Chicago, Ill., ENG-2

Richard A. Briesmeister, Laramie, Wyoming, CMB-3 (Rehire)

Mary Beth Royer, Los Alamos, SD-DO

Gomer J. Gray, Los Alamos, SP-3

Elizabeth Anne Lujan, Santa Fe, N.M., M & R

Billy Ernest Trujillo, Santa Fe, N.M., M & R

John David Showers, Los Alamos, SP-3

George Robert Swain, Albuquerque, N.M., MP-3 (Rehire).

Evelyn Pearl Griggs, Los Alamos, N-DO (Casual).

Margaret I. Briesmeister, Los Alamos, P-12.

Elizabeth L. Leffler, Los Alamos, H-2 (Casual).

Freeman R. Castleberry, Oak Ridge, Tenn., CMB-3.

Alvin R. Larson, Middleton, Conn., T-2.

Maynard L. Arment, Rolla, Mo., N-1.

Miriam Julia Gaffney, Los Alamos, GMX-11.

Judith Ann Wagner, Los Alamos, P-18 (Part Time).

Cheryl K. DePoorter, Los Alamos, K-1 (Casual).

Chester W. Woodson, Los Alamos, CMB-14 (Rehire-Casual).

Meta Ann Kasman, Los Alamos, PER-1 (Casual).

Robert Inglis, Jr., North Abington, Mass., D-8.

Frederick O. Richter, Denver, Colo., SD-1.

David A. Neal, Lafayette, Ind., CMB-3.

Larry James Dalton, Carbondale, Ill., MP-2.

Eugene M. Wewerka, St. Paul, Minn., CMF-13.

Tadeusz J. Wachocki, Downey, Calif., N-7.

Charles Lee Wilson, El Paso, Texas, T-7.

Donald Edgar Mark, Lakehurst, N.J., GMX-6 (Rehire).

Presentation at Two Seminars: (1) Staff Seminar and Nuclear Society MIT Chapter, Dept. of Nuclear Engineering, MIT, Nov. 3; (2) Staff Seminar, Nuclear Engineering Dept., Cornell Univ., Nov. 12:

"Thermal Neutron Spectra from an Underground Nuclear Explosion" by Henry A. Sandmeier, T-DOT.

Sixteenth Annual Meeting of the Animal Care Panel, Philadelphia, Nov. 15-19:

"Biochemical and Hematological Characteristics: Notes on Some Behavioral Eccentricities of the Stump-Tail Macaque, *Macaca speciosa*" by J. C. Hensley, Camille F. Bidwell, and A. M. Martinez, all H-4.

Presentation at Combined Meeting of Rocky Mountain Section of AIHA Albuquerque, Oct. 22:

"Collection of Particles from KIWI-TNT for Size Distribution Measurement" by Evan E. Campbell, H-5.

First Symposium on Accelerator Radiation Dosimetry and Experience, Brookhaven National Laboratory, Upton, N.Y., Nov. 3-5:

"The Single-Sphere Neutron Monitoring Instrument" by Dale E. Hankins, H-1.

Fifth Annual Meeting of the American Society for Cell Biology, Philadelphia, Nov. 10-12:

"Sialic Acid and the Trypsin Barrier" by Paul M. Kraemer, H-4.

WHAT'S DOING

LIGHT OPERA: "Kismet," production of the Los Alamos Light Opera Company. Civic Auditorium, December 3, 4, 10 and 11, 8:15 p.m. Tickets \$3, \$2.50, \$2 and \$1.50.

CHURCHES OPEN HOUSE: All churches affiliated with the Los Alamos Ministerial Alliance will be open to the public from 2 p.m. to 4:30 p.m. on Sunday, December 12.

OUTDOOR ASSOCIATION: No charge; open to the public. Contact leader for information regarding specific hikes.

Sunday, December 5, short hike or snowshoe event, depending on weather. Ken Ewing, leader.

Sunday, December 12, hike or snowshoe event, depending on weather. Jay Fries, leader.

Thursday, January 6, meeting, 8 p.m., at Liz Gittings residence, 124 Paseo Penasco.

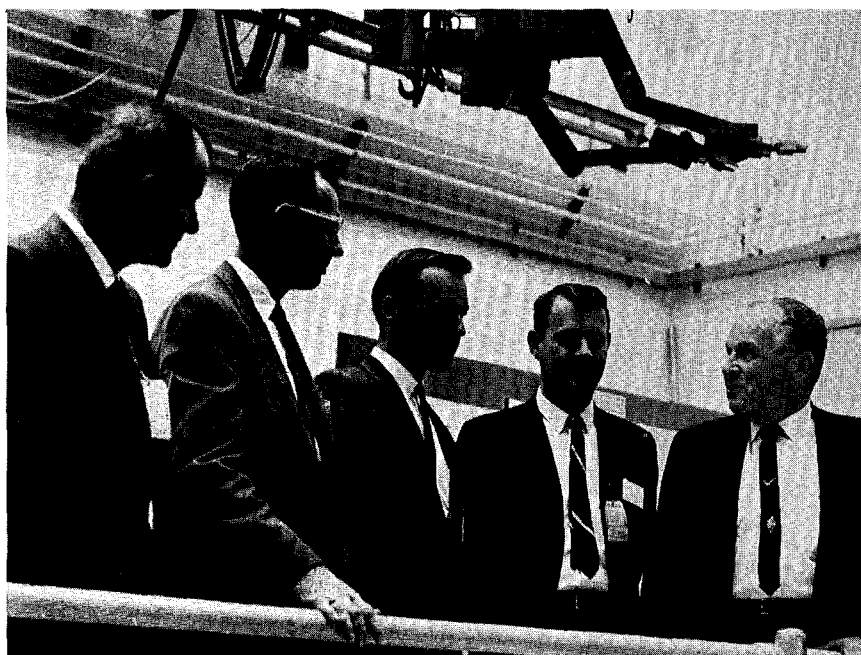
PUBLIC SWIMMING: Los Alamos High School Pool, Adults 35 cents, children 15 cents. Saturday and Sunday 1 to 6 p.m. Monday, Tuesday and Wednesday, 7:30 to 9:30 p.m.

ART EXHIBITION: Sixteen paintings furnished by Gallery "A" of Taos are on display in halls and offices of LASL Personnel Building, SM-123, until March 1. They are part of permanent, rotating arrangement with Taos galleries to provide paintings for Personnel Building display.

FOLK DANCING: International Folk Dancers Club, Recreation Hall, Tuesdays 7:45 to 11 p.m. First half hour is devoted to instruction. Everyone welcome, 40 cents per person per night.

FILM SOCIETY: Civic Auditorium. Films shown 7 and 9 p.m. Admission by season ticket or 90 cents single admission.

Wednesday, December 15, "The Green Man," British comedy starring Alastair Sim and Terry-Thomas. Season tickets for 1966 will be on sale at the door at \$4.



Standing beneath the agile limbs of Minotaur, the super-manipulator at UHTREX, are some of the more than 20 nondestructive testing specialists in the AEC's Division of Reactor Development who were in Los Alamos November 3, 4 and 5 for a symposium and tour of facilities. From left: Harold Berger of Argonne National Laboratory, R. W. McClung of Oak Ridge National Laboratory, K. E. Horton of the DRD, W. W. Taylor of E. I. duPont de Nemours and Co. Savannah River plant, and Gerold H. Tenney, GMX-1 group leader at LASL. Tenney is chairman of the Nondestructive Testing Working Group in the DRD and was host.

Co-op Research Information Going To ARMU and Plains Universities

Printed summaries of certain types of work, facilities and techniques that are available at Los Alamos for cooperative research programs have been sent to officials of Western and Great Plains universities.

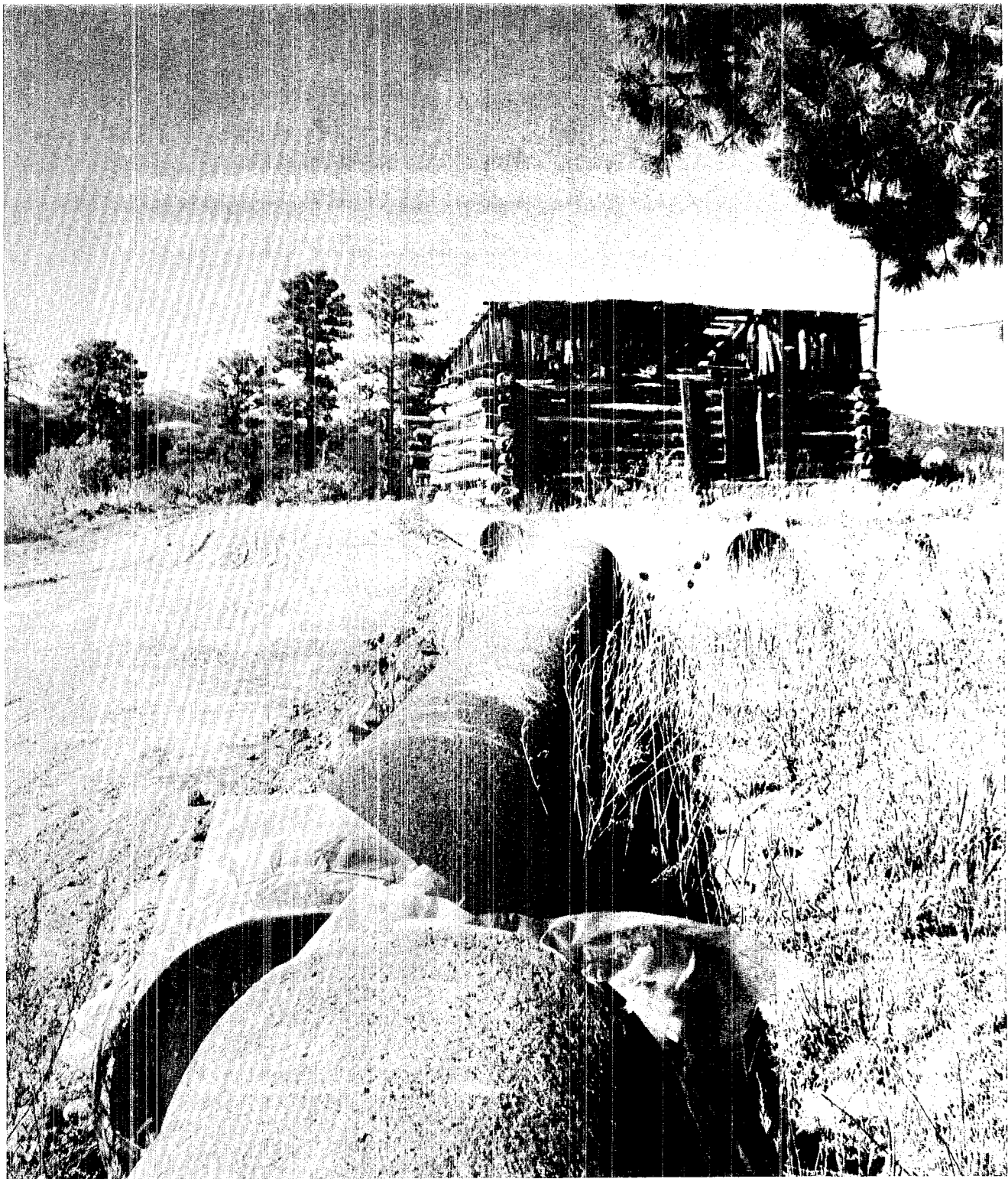
The summaries are based on reports given at a meeting here last spring which was sponsored by LASL and the Associated Rocky Mountain Universities.

The cooperative research program is one of the means proposed at LASL-ARMU meetings in the past few years for extending use of the Laboratory's facilities.

Individuals participating in the program will be expected to have a fellowship or other means of personal financial support during their stay at Los Alamos. Normally, al-

though research will be of an unclassified nature and the results publishable, participants will need the standard AEC "Q" security clearance in order that they may take full advantage of Laboratory facilities.

Summaries distributed: Nuclear Physics Facilities in P Division, Notes on the Radiochemistry Group, Biological and Medical Research Activities and Facilities, Mathematics and Theoretical Physics, Chemistry and Metallurgy Areas of Research and Development, N Division Research Interests and Equipment, Low Temperature Research, Selected Research Activities and Facilities in GMX Division, K Division (Reactor Fuel Development Activities) and the Sherwood Project.



Abandoned, ramshackle and broken for generations but a landmark nevertheless, this old log cabin along Pajarito Road at the Ten Site entrance has survived one latter day threat but is doomed by another. The cabin was built a half-century ago as a "new house" replacement for a Nineteenth Century homesteader. Bences Gonzales of Espanola, a Pajarito Plateau native who first farmed at Los Alamos

and then worked for the Army and Laboratory until retiring in 1959, helped his father-in-law build the "new" cabin. Bill Regan's photo shows how close the cabin is to the route of a new water main that was installed along Pajarito Road last month. Another pipeline—to carry high pressure hydrogen from the TA-3 tank area to TA-46—will be laid in late winter and to make room for it, the elderly cabin will have to go.

To Mars— and back

A manned round trip to Mars requires velocity increments far in excess of those achieved by chemical rockets. The high exhaust velocities obtainable from nuclear rockets make them a favored contender for this application.

That's why Los Alamos was asked to use the great stores of human energy and creative imagination in its unique community of science to develop nuclear powered rockets—the kind which can take man to Mars and back.

Phoebus 2, now being developed, will be the most powerful nuclear propulsion reactor ever built.

The project needs the talents of physical chemists, radiochemists, inorganic chemists, chemical engineers, mechanical engineers, electrical engineers, nuclear engineers, control engineers, engineering physicists, nuclear physicists, materials scientists, mathematicians, metallurgists and others.

If you would like to be a part of this pioneering effort, we would like to hear from you. Write Director of Personnel, Div. 65-220. (Because of the unique nature of our mission, employees must be U. S. citizens.)



This is the third in a series of ads featuring art by students in the Los Alamos school system. This painting is by **John Bouton**, who was a senior at Los Alamos High School when it was painted.



Henry T. Motz
3137 Woodland
Los Alamos, New Mexico

87544